COURSE TITLE: **ONLINE MATH TUTORIALS: Khan Academy & More- CLOSED 1/20/25**

WA CLOCK HRS: 30
OREGON PDUs: 30
NO. OF CREDITS: **3 QUARTER CREDITS** **PENNSYLVANIA ACT 48: 30**
[semester equivalent = 2.00 credits]

INSTRUCTOR: **Wendi Fein**
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COURSE DESCRIPTION:

This course is CLOSED to new registrations

This course meets OSPI's STEM requirements.

There is currently an increased emphasis on relevant and rigorous curriculum, using technology in and out of the classroom, differentiating and supplementing instruction and using open education resources. It is important, therefore, to review and evaluate the variety and effectiveness of on-line tutorials and open education resources in the area of math. In this course, secondary and elementary math teachers will look at Khan Academy from the perspective of both students and teachers. You will also find and evaluate other on-line math tutorial programs. The course will allow you to find relevant open education resources that can supplement any math curriculum. Teachers who desire 400 or 500 level credit, will use these resources to create several units of study that can be individualized or adapted for the classroom. For the 500 level, teachers will also be asked to present your findings to parents, faculty and/or administrators. Text is not required. All readings are online.

LEARNING OUTCOMES: Upon completion of this course, participants will have:
1) A greater knowledge and appreciation of the diversity of supplemental math instruction that is available online and appropriate for their teaching situation.

2) Learned how to resource online math tutorials and successfully integrate them into classroom instruction.

3) Gained experience in using online math resources as part of student's homework or remedial work.

COURSE REQUIREMENTS:
Completion of all specified assignments is required for issuance of hours or credit. The Heritage Institute does not award partial credit.

The use of artificial intelligence is not permitted. Assignment responses found to be generated by AI will not be accepted.

HOURS EARNED:
Completing the basic assignments (Section A. Information Acquisition) for this course automatically earns participants their choice of CEUs (Continuing Education Units), Washington State Clock Hours, Oregon PDUs, or Pennsylvania ACT 48 Hours. The Heritage Institute offers CEUs and is an approved provider of Washington State Clock Hours, Oregon PDUs, and Pennsylvania ACT 48 Hours.

UNIVERSITY QUARTER CREDIT INFORMATION

REQUIREMENTS FOR UNIVERSITY QUARTER CREDIT
Continuing Education Quarter credits are awarded by Antioch University Seattle (AUS). AUS requires 75% or better for credit at the 400 level and 85% or better to issue credit at the 500 level. These criteria refer both to the amount and quality of work submitted.

1. Completion of Information Acquisition assignments 30%
2. Completion of Learning Application assignments 40%
3. Completion of Integration Paper assignment 30%

CREDIT/NO CREDIT (No Letter Grades or Numeric Equivalents on Transcripts)
Antioch University Seattle (AUS) Continuing Education Quarter credit is offered on a Credit/No Credit basis; neither letter grades nor numeric equivalents are on a transcript. 400 level credit is equal to a "C" or better, 500 level credit is equal to a "B" or better. This information is on the back of the transcript.

AUS Continuing Education quarter credits may or may not be accepted into degree programs. Prior to registering, determine with your district personnel, department head, or state education office the acceptability of these credits for your purpose.

ADDITIONAL COURSE INFORMATION

REQUIRED TEXT
Text is not required. All readings are online

None. All reading is online.

MATERIALS FEE
All readings are online

ASSIGNMENTS REQUIRED FOR HOURS OR UNIVERSITY QUARTER CREDIT

A. INFORMATION ACQUISITION
Assignments done in a course forum will show responses from all educators who have or are taking the course independently. Feel free to read and respond to others' comments.
Group participants can only view and respond to their group members in the Forum.

Assignment #1: Personal Introduction
Assignment #1:

Please write a one (1) page personal introduction of yourself by responding to the following questions. Post your statement in the online response box:

a) Why did you choose this course? What do you hope to learn?

b) What do you teach? What gets you excited to come to school?

c) What kinds of math topics are you looking for?

d) What prior experience have you had with Khan Academy or other on line tutorial programs?

e) What prior experience have you had with using and evaluating Open Education resources (OER)?

Post your answer in the online response box.

Assignment #2: Khan Academy Overview 60 Minutes
Khan Academy: overview: navigating the site as a teacher/student

a) View "60 Minutes" segment on Khan Academy. https://www.youtube.com/watch?v=zxJgPHM5NYI&feature=player_embedded

b) Go to the website: http://www.khanacademy.org/ If you do not already have a login/password account, please create one. Read the introduction to Khan Academy and spend some time navigating through the site as both a student and teacher. If you are familiar with the site, please delve further into the site and its vast possibilities.

c) Write 1-2 page summary that includes the following:

- 1) Your impressions of Khan Academy based on the "60 Minutes" segment
- 2) The challenges in navigating the Khan site as both a teacher and a student.
- 3) Ways you might use this site in your classroom? If you are already using the site,
- how might you extend or take a different approach to its use?

Post your answer in the online response box.

Assignment #3: Exploring Khan Academy
Assignment # 3

Go to Khan Academy: http://www.khanacademy.org/

Select relevant math topics from the SUBJECT or GRADE level link for your classroom. If you are already using the site, please select new topics and mini lessons.

Preview at least 15 of the Khan mini lessons relevant to your teaching situation. Look at the practices and the STUCK? watch video sections. Write a short paragraph summary of your findings on each of the mini lessons. The total number of summaries should fit approximately 3-4 pages in length. Include the following in EACH of the 15 summaries:

1) The topic/mini lesson you chose, appropriate grade levels

2) The effectiveness/ineffectiveness of the video and the practice exercises from both the student and teacher perspective.

3) How you would use/extend it in the classroom or as supplemental instruction

Post your answer in the online response box.

Assignment #4: On-Line Math Tutorials
Assignment # 4

There are many other tutorials available on the web. Find four (4) other on-line math tutorials that you can use in your classroom that are FREE and accessible to all students/parents. One of the websites needs to be a STEM website that integrates math and one of the following: Technology, Engineering or Science. Review and evaluate. In a 2-3 page summary, please include:

1) The URL /website link.

2) The effectiveness/ineffectiveness of each the four (4) websites from both the student

and teacher perspective.

3) How you would use these tutorials in the classroom or as supplemental instruction.

Here are just some suggestions, but you are encouraged to explore other options.

http://www.mathtv.com/ (all levels)

http://www.mathplayground.com/mathvideos.html (K-8 grades)

http://www.brightstorm.com/feature/watch-free-sample-videos (secondary)

http://www.teachertube.com/ (you can post your own videos, too)

http://www.math-videos-online.com/ (K-8)

http://video.search.yahoo.com/search/video?p=online+math+tutorial+videos

Virtual Nerd
https://virtualnerd.com

STEM

https://www.educationworld.com/a_lesson/great-stem-web-sites-students-classroom.shtml

https://www.sciencekids.co.nz

.https://www.wabisabilearning.com/blog/stem-resource-list-40-useful-websites

Post your answer in the online response box.

Assignment #5: Open Education Resources (OER)
Assignment # 5

Open Education Resources (OER) are becoming an alternative to classroom textbooks and a resource for supplemental instruction. It is a challenging task to find effective resources that are free and relevant, yet meet state and common core standards. There is no one, standard definition of Open Educational Resources. However, the following broad definition of OERs from OER Commons seems to be generally accepted by the educational community:

Open Educational Resources (OER) are teaching and learning materials that are freely available online for everyone to use, whether you are an instructor, student or self-learner. Examples of OER include: full courses, course modules, syllabi, lectures, homework assignments, quizzes, lab and classroom activities, pedagogical materials, games, simulations, and many more resources contained in digital media collections from around the world.

Please review at least four (4) OER sites from suggestions below or others of interest to you for their potential use in your classroom. Write a 2-3 page summary that includes the 4 websites you explored. NOTE: One OER site needs to have a STEM component beyond math. Please include:

1) The URL/address of the website, appropriate grade levels, topics you explored

2) The effectiveness/ineffectiveness of the resources from both the student

and teacher perspective

3) How you would use the websites in the classroom or as supplemental instruction

http://www.oercommons.org/ for all levels, many subjects

http://www.pbslearningmedia.org/ for all levels, many subjects

http://www.ck12.org/student/ The CK-12 Foundation's Flexbook platform provides free, collaboratively-built and openly-licensed digital textbooks for K-12. Much of the content is standards based.

https://www.oercommons.org/groups/washington-mathematics/2287/5357/?&__hub_id=1developed by Washington State, aligned with common core standards and is relevant to other states adopted common core

http://www.livebinders.com/play/play/117659 This site contains a variety of open-licensed educational resources that can be used in K-12, as well as other useful information. All materials licensed CC BY to share.

https://sbctc.instructure.com/courses

www.ixl.com

http://www.gavirtuallearning.org/Resources/MathResources/MathShared/SharedGSEGeometry17.aspx

Georgia Virtual Learning middle/high school

Middle School Computer Projects - https://www.middleschoolcomputerprojects.org/

STE(A)M

https://www.educationworld.com/a_lesson/great-stem-web-sites-students-classroom.shtml

https://www.wabisabilearning.com/blog/stem-resource-list-40-useful-websites

https://ngl.cengage.com/assets/html/stem/ National Geographic CENGAGE

https://www.billnye.com/the-science-guy

https://fullsteam.mit.edu

https://iexplorestem.org/engineering-activities

https://www.sciencekids.co.nz

MasterMathMentor - STE(A)M - https://mastermathmentor.com/

Post your answer in the online response box.

This completes the assignments required for Clock Hours.

Continue to the next section for additional assignments required for University Quarter Credit

ADDITIONAL ASSIGNMENTS REQUIRED FOR UNIVERSITY QUARTER CREDIT

B. LEARNING APPLICATION
In this section, you will apply your learning to your professional situation. This course assumes that most participants are classroom teachers who have access to students. If you do not have a classroom available to you, please contact the instructor for course modifications. Assignments done in a course forum will show responses from all educators who have or are taking the course independently. ?Feel free to read and respond to others' comments. Group participants can only view and respond to their group members in the Forum.

Assignment #6: Develop a unit: Lessons
Assignment # 6A:

- From your research of Khan Academy or other on line tutorial programs, develop a unit of at least three (3) lessons you can implement in your classroom. One of the units needs to be integrated with at least one STEM concepts beyond math.
- Lesson Plan Design
  Title Enter Lesson Plan Title, and your name
  Audience Enter grade level (& special student group if applicable)
  Time duration Enter time duration of the entire lesson
  Big Idea(s)/Essential Question(s)
  Enter learning goal(s) in the form of a question(s)
  Objectives(s) Enter Your Objective(s) and correlation to district standards (state,Common Core, other)
  Props & Materials Enter props/materials/equipment/any learning handouts
  Activities/Tasks/Procedures
  Any Special Reminders
  Enter activities/tasks/procedures/practice
  Enter anything you want to remember to pay attention to
  Peer Review Enter peer relationship to you and summary of peer comments
- Implement at least one lesson with students in your classroom.
- Write a 250-500 word commentary on what worked well and what could be improved.
- Include any student feedback or noteworthy student products.
- Submit your lesson to your instructor via the lesson tab below.
- Share what you've learned with other teachers taking our courses by checking the lesson library box when you submit your lesson.

OR

Assignment #6-B:

Use this option if you do not have a classroom available.

- Prepare three lessons as above. (Do not implement it.)
- Write a 500+ word article concerning any noteworthy success you've had as a teacher with one or more students.
- Please refer to the guidelines for our blog What Works: Teaching at its Best, (www.hol.edu/blog) prior to writing your article.
- When you submit your article to your instructor, please also email a copy to Renee Leon, renee@hol.edu, THI blog curator and media specialist.
- Indicate whether or not you are OK with having your article considered for publishing on our website.
- Submit your article to your instructor via Response field and the modified lesson via Submit Lesson.
- As you submit your lesson, consider sharing it with other teachers taking our courses by checking the lesson library box.

Assignment #7: OER lesson plans
Assignment # 7

From your research of Open Education Resources, develop a unit of at least three (3) lessons you can implement in your classroom.

One of the lessons must incorporate an additional STEM concept: science, technology or engineering.

Your unit should include:

- Lesson Plan Design
  Title Enter Lesson Plan Title, and your name
  Audience Enter grade level (& special student group if applicable)
  Time duration Enter time duration of the entire lesson
  Big Idea(s)/Essential Question(s)
  Enter learning goal(s) in the form of a question(s)
  Objectives(s) Enter Your Objective(s) and correlation to district standards (state,Common Core, other)
  Props & Materials Enter props/materials/equipment/any learning handouts
  Activities/Tasks/Procedures
  Any Special Reminders
  Enter activities/tasks/procedures/practice
  Enter anything you want to remember to pay attention to
  Peer Review Enter peer relationship to you and summary of peer comments

Submit your lessons via the lesson tab, and consider sharing your doc with other teachers via the Lesson Plan Library.

Assignment #8: Teach and evaluate lessons
Assignment # 8

Teach and evaluate 1 lesson you created from assignment 7 for this course and provide a 1 page summary of your post-lesson thoughts on both your presentation and student performance, posting in the online response box. NOTE: If you are completing this assignment during the summer or are not in a math classroom, please contact your instructor, Wendi Fein, for an alternative assignment.

Post your answer in the online response box.

Assignment #9: (500 Level ONLY) Share new resources
Assignment #9: (500 Level Only)

In addition to the 400 level assignments, complete one of the following:

Option A) Create a power point or similar presentation of OER resources and their usefulness in the classroom. Present to parents, faculty and/or administrators.

OR

Option B) Create a power point or similar presentation of Khan Academy and other on-line tutorials and their usefulness and lack of usefulness in the classroom. Present to parents, faculty and/or administrators. Please include evaluations of the presentation as well.

OR

Option C) Suggest an alternative assignment that would better meet your needs.

Post your answer in the online response box.

C. INTEGRATION PAPER
Assignment #10: (Required for 400 and 500 Level)

SELF REFLECTION & INTEGRATION PAPER
(Please do not write this paper until you've completed all of your other assignments)

Write a 400-500 word Integration Paper answering these 5 questions:

1. What did you learn vs. what you expected to learn from this course?
2. What aspects of the course were most helpful and why?
3. What further knowledge and skills in this general area do you feel you need?
4. How, when and where will you use what you have learned?
5. How and with what other school or community members might you share what you learned?

INSTRUCTOR COMMENTS ON YOUR WORK:
Instructors will comment on each assignment. If you do not hear from the instructor within a few days of posting your assignment, please get in touch with them immediately.

QUALIFICATIONS FOR TEACHING THIS COURSE:
Wendi Fein, M.A., enthusiastically brings her years of teaching experiences since 1980 to the development and implementation of her courses. Presently, she is teaching Adult Education, Developmental Math and English as a Second Language at Tacoma Community College in Tacoma Washington.

She spent 25 years teaching in K-12 public schools with a focus on special education, math, dance, PE, study skills and English/World Cultures. In addition, Wendi has traveled and volunteered extensively, bringing her stories and passion for human rights and equity into the classroom. Wendi holds a B.A. from the University of California, Santa Barbara and an M.A. in Special Education.

BIBLIOGRAPHY

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BIBLIOGRAPHY

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Brown, Laura Lewis. "Instill a Love of Math." Web. PBS Parent. July, 2012. http://www.pbs.org/parents/education/math/math-tips-for-parents/instill-a-love-of-math/

Donaldson, Cindy. "The Khan Academy: Changing the Face of Education?" Web. education.com. Nov. 2011. http://www.education.com/magazine/article/khan-academy/

Phillips, Anna. "For Math, Click Calculate." New York Times. January 20, 2012. http://www.nytimes.com/2012/01/22/education/edlife/for-math-click-calculate.html?_r=3&

Dan Meyer. "Math class needs a makeover." Web. TED Ideas worth spreading. May, 2010.

http://www.ted.com/talks/dan_meyer_math_curriculum_makeover.html

Conrad Wolfram. "Teaching kids real math with computers." Web. TED Ideas worth spreading. Nov. 2010. http://www.ted.com/talks/conrad_wolfram_teaching_kids_real_math_with_computers.html

Thompson, Clive. "How Khan Academy Is Changing the Rules of Education." Web. WIRED. July 15, 2011. http://www.wired.com/magazine/2011/07/ff_khan/

ON LINE TUTORIAL WEBSITES.

http://www.mathtv.com/ (all levels)

http://www.mathplayground.com/mathvideos.html (K-8 grades)

http://www.brightstorm.com/feature/watch-free-sample-videos (secondary)

http://www.teachertube.com/ (you can post your own videos, too)

http://www.math-videos-online.com/ (K-8)

http://video.search.yahoo.com/search/video?p=online+math+tutorial+videos